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**Question of the Month** – Calculation of loads in accordance with the National Electrical Code (NEC®) requires knowledge of the amount of power consumed by the circuits, feeders, and service. Power is expressed in volt-amperes or watts. How many volt-amperes are drawn by the following (assume 100 percent power factor). – *See correct answers on page 2.*

- 1) 4.5 kilowatt (kW), 240-volt single-phase water heater.
- 2) 10 ampere, 120-volt single-phase dishwasher.
- 3) 5 horsepower, 460-volt three-phase air compressor.

## Legislative Update

As discussed in the [February 2016](#) newsletter, the legislature has been considering several bills that may affect the electrical program. Only two of those bills passed the first [cutoff date](#) and continued on for further consideration. Of those, only one passed the second cutoff date and is still alive.

[Engrossed House Bill 1590](#), which would require completion of an apprenticeship to be eligible for examination for an (01) general journey level or (02) residential certificate of competency passed the House on February 16 and was referred to the Senate Committee on Commerce and Labor. A hearing was conducted on February 26, and the Committee did not pass the bill on for further consideration. The only bill still available for consideration is [House Bill 2886](#), which deals with allowing the department to alter work scopes of three specialties, which are partially or entirely defined in the law. This bill passed the House on February 16. On February 26, the Senate Committee on Commerce and Labor sent the bill on to the Senate Rules Committee for further consideration.

## Happy Tenth Anniversary to the E-CORE Team

Congratulations to Faith Jeffrey and the Electrical Compliance, Outreach, Regulation and Education (E-CORE) team for ten years of successful work in reducing the effects of the underground economy on legitimate electrical contractors and electricians. The team has focused their efforts on contractors' concerns with the underground economy (i.e., unlicensed electrical contractors, uncertified electricians, and those who fail to get electrical permits).

The E-CORE team was created in 2005 with legislative approval, in large part, due to a successful pilot program led by Jim Hinrichs. The SAFES (Strategic Action for Electrical Safety) team consisted of Jim and three inspectors focused on reducing the effects of the underground economy and increasing the public's awareness about the dangers of electricity and the importance of using qualified licensed electrical contractors to do electrical work. SAFES operated as a team across the state and coordinated with local inspectors and city jurisdictions to achieve the maximum effectiveness. After a successful six-month pilot of the SAFES team, the legislature approved funding for a three person E-CORE team which became operational in early 2006. In their ten years of hard work, the E-CORE team has issued almost 16,000 warnings and citations for focused underground economy violations. In addition, team members provide training to electrical inspectors, and outreach to various groups of electrical program stakeholders.

Thank you and congratulations to those who have been a part of this successful effort over the years: Jim Hinrichs, SAFES team Supervisor, and SAFES team members Michael Cerfus, Steve Freund, and David Myers; Faith Jeffrey, E-CORE and Audit Manager, and current and former E-CORE team members Tony Bierward, Charlie Brinkmeyer, Emilio Castro, Ken Copeland, Rand Jones, Phil Jordan (the only original member still on the team), Bob Judson, Mark Leon, Darin Lyon, Bob Matson, Chuck Murray, Jack Oxford, Clinton Quinn, Alexis Reed, and Jeff Robertson. Also, special thanks to Ron Fuller, former Chief Electrical Inspector who was instrumental in the establishment of the SAFES and E-CORE teams.

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Page 1 of 2

## Safety Tip of the Month

- Keep power cords clear of tools during use.
- Suspend power cords over aisles and work areas to eliminate stumbling, or tripping hazards or damage to cords.
- Do not carry electrical tools by the power cord.
- Do not tie power cords in tight knots. Knots can cause short circuits and shocks.

Because of their proven success, today's E-CORE team has expanded and now consists of six dedicated full-time members. Compliance efforts of our 113 electrical inspectors has been enhanced because of training provided by members of the E-CORE team. If you would like to help reduce the effects of the underground economy, you can report electrical law violations to your local electrical inspection office or the nearest E-CORE team member. For more information, visit the [Report Electrical Law Violations](#) page of our website.

## 2017 National Electrical Code® Update

The process of updating the National Electrical Code® is nearly complete. The National Fire Protection Association (NFPA) received 4,012 public inputs (proposals) recommending changes to the 2014 NEC®. Of those, the nineteen Code-Making panels recommended 1,235 revisions. These revisions were posted in a First Draft of the 2017 NEC®. A summary of some of the notable revisions was published in the International Association of Electrical Inspectors (IAEI) magazine. Here are links to [Part 1](#) and [Part 2](#). If you would like to search the first draft for revisions to specific articles, you may do so on the [NFPA 70 Revision cycle information](#) page of NFPA's website. Select "First Draft" and you will be taken to a page where you may log in or create an account. It is free and available to the public. Soon, a second draft will be posted which will include the final responses to public comments regarding changes in the first draft.

Sometime this fall, the 2017 NEC® will be published. We will provide updates through this newsletter about the rule revision process necessary to adopt it and any proposed revisions to the electrical rules. During the rule revision process, proposals will be solicited. This is an open process where anyone can participate. All proposals are considered. Before recommending adoption, we get advice from a technical advisory committee and the Electrical Board. Before adopting any proposals, a public hearing is held so everyone has an opportunity to provide input.

## 590.4(J) Support of Temporary Branch Circuit and Feeder Cords and Cables

The requirements for support of cable assemblies and flexible cords and cables used as branch circuits and feeders were amended in the 2014 NEC®. If flexible cords and cables are used as branch circuits or feeders, they shall not be installed on the floor or on the ground. Extension cords shall not be required to comply with 590.4(J). This change aligns the NEC® requirements for temporary wiring installations with the current OSHA requirements in [29 CFR 1926.405\(a\)\(2\)\(ii\)\(b\)](#).

The substantiation presented, which was accepted by the Code-Making Panel (CMP) for this proposal said: *"It is common to see temporary wiring run on the floor and on the ground in construction sites. This is a very dangerous practice. We have seen cable assemblies laying on the ground damaged by construction activity. This is a real shock hazard for construction workers and anyone else in the work area. Construction locations are almost always wet locations. Until a roof is installed and windows are finished the entire site becomes a wet location during and for days after a rainfall. The rules in 590.6 for GFCI provide excellent protection for workers utilizing cord and plug connected tools, but they only protect us on the load side of the outlet. There is no GFCI protection on the feeder or branch circuit. The OSHA standards for construction do not allow them to be run on the floor or ground in 1926.405(a) (2)(ii)(b). Temporary wiring is always looked upon as being a "class less than" and due to the brief length of time it is installed and the placement of cords and cable assemblies on the floor or ground is permitted. Extension cords on the ground or floor are "extensions" of the branch circuit and are permitted on the floor or ground because they are GFCI protected."*

The department has not amended this requirement. Flexible cords and cables used as branch circuits or feeders are not permitted to be installed on the floor or on the ground.

**Ugly Picture:** If viewing this document online, click on the picture to open a larger image. Notice the creative field-fabricated hold-down device. Its present location looks like the second attempt at installation. In addition, the circuit breakers are from three different manufacturers. You can find useful information about panelboard installation in UL's [Panelboard Marking and Application Guide](#). See section 15 on page 20, regarding circuit breaker compatibility.

**Answer to Question of the Month:** 1) 4500 volt-amperes (4.5 kW X 1000 W/kW X 1.0 p.f.); 2) 1200 volt-amperes (10 amperes X 120 volts); 3) 6,311 volt-amperes (7.6 amperes X 480V X  $\sqrt{3}$ ) See NEC® Table 430.250 for 3-phase motor full-load current;  $\sqrt{3}$  (square root) of 3 = 1.73 (3Ø power formula).



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